stand also as a constant terror to the diagnostician who would discover the competency, the health or the disease of a kidney through the act of catheterizing the ureters.

9. *Malformations of the adrenals or supra-renal capsules.*—Complete absence of the adrenals is observed only in cases of unviable malformation, usu-

FIG. 8.—Showing a section of a kidney with a double pelvis and two ureters for a part of the way to the bladder. (Rayer.)

ally with defects in the head. Zander has observed absence or aplasia of the adrenals in connection with malformation of the genitals in nineteen out of fifty-six cases of this malformation. Enormous development of a supra-renal capsule has been observed with the complete absence of the corresponding kidney. The two adrenals are often united into one, especially in horseshoe kidney, and occasionally they are displaced with the kidney in the pelvis.

A remarkable error is found in remnants of the supra-renal body in the substance of the kidney itself. From this displaced tissue paratheliomas of the kidney are thought to grow (Grawitz). Such displaced fragments of the adrenals have been found in the broad ligament, the posterior abdominal wall, the spermatic

FIG. 9.—Double ureters complete on both sides. (Rayer.)

vessels (Marchand), and between the head of the epididymis and the testicle (Dagonet). All of these conditions are to be explained by the early association of the matrix of the spermatic apparatus with the adrenal matrix before the descent of the testicle into the scrotum. This is a subject of such clinical importance that it will be considered later at length.

THE PRESENT STATUS OF VAGINAL SECTION WITH RECORD OF PERSONAL EXPERIENCE.

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Much of the improvement in gynecology within the last few years has consisted in the development of vaginal section.

The pioneer in this direction is undoubtedly J. N. Sauter of Constance, Switzerland, who, according to a preconceived plan, similar to that employed at the present day, removed the carcinomatous uterus per vaginam, although K. M. Langenbeck performed the operation in 1813. Blundell did the same in 1828 and Recamier and Delpach in 1830. This ended the first act in the drama. The results were so bad that the operation was practically abandoned until revived by Czerny in 1879.

In 1872 Robert Battey, followed by J. Marion Sims and T. Gaillard Thomas, began removing ovaries and small ovarian tumors per vaginam, and was thus the pioneer in this country. Very soon, however, the success of Tait in performing abdominal section, drew the gynecological world after him, and vaginal section again fell into disfavor.

In 1886 I began removing ovaries and ovarian tumors in this way and for a long time was the only one doing it in this country. But as a result of the performance of vaginal hysterectomy for diseases of the appendages in France, and of anterior colpotomy in Germany, during the last four or five years, vaginal section for diseased uterine appendages has now become a permanently established procedure. The reports of the facility with which Péan cured, by vaginal hysterectomy, cases of pelvic inflammation that had been considered too complicated for operation by abdominal section, as well as of the battle that is still waging over the method, have reached us all. Duehrssen and Mackenrodt's operations for vaginal fixation of the uterus gave a new impetus to vaginal section for diseased appendages, for Mackenrodt and A. Martin soon began to remove the ovaries, tubes, and even the products of ectopic gestation by anterior colpotomy.

The old dictum that vaginal section is inferior in value to abdominal section for pelvic disease because the pelvic cavity is not as accessible, is only true for conditions located at the pelvic brim. To the parts below the pelvic brim vaginal section gives as good and often better access, and without disturbing the abdominal viscera. Its only disadvantage in treating conditions within the pelvic cavity is the danger of hemorrhage. But even this, the greatest danger, is no greater, in my experience, than in an abdominal section. In 161 cases of vaginal section I had difficulty from hemorrhage in two cases only, and these were cases for which vaginal section should not be employed, viz., a large uterine fibroid and a large uterine sarcoma.

The danger of infection is practically no greater than in abdominal section, for the vagina and shaved vulva can be scrubbed with green soap, alcohol and corrosive mercuric chlorid as effectively as the surface of the abdomen, and the uterus can be made clean by curettage. If septic infection takes place, the resulting inflammation is always localized, unless complicated by the rare occurrence of ileus from intestinal adhesions, or unless vaginal section be done for abdominal rather than pelvic conditions.

In illustration of the possibilities and limitations of the method and the possibility of seeing and knowing what one is doing, I will briefly state what procedures have so far been demonstrated to be practicable.

Through a vertical incision in the median line behind the cervix, half an inch long, one finger can be introduced into the peritoneal cavity and the pelvic organs be directly palpated. Through an incision from an inch to an inch and a half long in the same place, diseased uterine appendages and the products of early extrauterine pregnancy, as well as small ovarian tumors, omental tumors and small subserous fibroids on the posterior uterine walls can be removed. I have not removed a fibroid from the posterior uterine wall in this way, but have taken sutures in it for the arrest of hemorrhage due to adhesions, which practically amounts to the same thing. The cul-de-sac can be obliterated by tamponing the sutured vaginal wall against the opposite side of Douglas's pouch and retroversion often be cured. This was a frequent result in my earlier operations.

Through a transverse incision behind the cervix, beside all that which can be done through the vertical incision, the whole posterior pelvic cavity, the fundus uteri, and sometimes the appendix vermiformis can be exposed to view by long retractors that reach almost to the promontory of the sacrum. This has been repeatedly demonstrated by Prior. The sacro-uterine ligaments can be shortened by suture, or the cul-de-sac of Douglas be obliterated by excision of its peritoneal lining, or by packing it with gauze. Prior cures retroversion by the latter method. It is also possible, as I have demonstrated in one case, to extirpate the rectum considerably above the lower reflection of the peritoneum through this incision. By prolonging the incision laterally, or forward beside the uterus, moderate sized intraligamentous fibroids can be taken out either whole or by morcellement. The danger of wounding either the uterine artery or ureter can be avoided by ligaturing the former and placing a flexible bougie in the latter.

By an incision in the anterior vaginal fornix and separation of the bladder, fibroid tumors can be enucleated from the anterior uterine wall, as I have twice done; or by bisection of the anterior uterine wall they can be removed from the uterine cavity or posterior uterine wall and the uterine incision be sutured. Diseased appendages can be readily removed or drawn into the vagina, the ovaries resected, the closed tubes made pervious, and the parts be returned without bad results. The pubic peritoneum, normally lying above the collapsed bladder, can be drawn down into the vagina, and the stumps of removed appendages or the fundus uteri can be sutured to it. The round ligaments can be grasped and those portions near the internal inguinal rings can be drawn down in view and attached to the uterus, thus shortening them as much as is usually done in Alexander's operation. I have shortened the ligaments and attached the fundus or stumps over the bladder in twenty-four cases of retroversion, and have kept watch of most of them since. In but two cases that I know of has there been a return of the retroversion.

All this can be done without removing the uterus. If we remove the uterus the whole pelvic cavity is opened up to sight.

Intestinal and rectal tears can be successfully sutured. Medium sized adherent dermoid, papillary

and other pelvis-bound tumors can be removed, and the beds tamponed with greater safety than by abdominal section. Septic appendages, with adhesions that would make their removal by abdominal section almost unjustifiable, can be cured by vaginal section with but little risk.

Although so much can be done by vaginal section there is danger of extending its limits too far. Péan, Segond, Jacobs and others, in searching for these limits have, with consummate skill, made use of the method in cases for which it is not generally adapted and in which it can only succeed in the hand of such experts. Fibroids larger than a full term fetal head can be removed in this way, but the mortality will be greater than by abdominal section. The duration of the operation is apt to be too long and the loss of blood considerable. Fibro-sarcomas of the uterus of large size are still less suitable. Advanced carcinoma of the body of the uterus should be removed by abdominal section because metastatic deposits can be recognized and managed better. If I were to judge from a single experience, I should say that vaginal section is of but little value in tubercular peritonitis. I removed the tubercular tubes in a case connected with ascites and deposits of tubercles on the surface of the pelvic peritoneum. Although a large quantity of fluid was evacuated, the appendages completely extirpated and the cul-de-sac drained, the tubercular peritonitis increased steadily after the operation. The evacuation of the fluid had but little if any effect.

I have so far performed vaginal section 162 times, including two cases in which I opened the peritoneal cavity by mistake, and including none in which the cavity was not opened. Eighty of these sections were done without removal of the uterus. Of the latter all recovered from the immediate and remote effects of the operation.

I have performed vaginal hysterectomy eighty-one times, with four deaths, and resection of the rectum once, with one death. These represent results as they are, but not as they should have been. One of these deaths was in a case of sarcoma larger than a child's head; the other in the case of a large fibromyoma in an excessively anemic woman 53 years old; neither of them adapted to vaginal section. Had I operated by abdominal section, I should have recognized the futility of removing the first tumor, and would have been able safely to remove the second. If we eliminate these two cases, which ought not to have been operated upon in this way, and the excision of the rectum, which does not belong to the ordinary vaginal section, the mortality instead of being 3.05 per cent. would be 1.22 per cent., a smaller percentage than I could have hoped for had I performed abdominal section for them. In fact a mortality of 3.05 per cent. in the first 162 cases (and which, including all, includes of course those upon which my experience was gained) is better than I could expect to do in a first series of 162 abdominal sections, and the series included more septic and complicated cases than is the rule in an equally extended series of abdominal sections.

The Roentgen Rays Innocuous.—Prof. Moritz Benedict in the *Medicinische Wochenschrift* ridicules the notion that the Roentgen rays are injurious to the hair or otherwise. He maintains that a few accidental cases have originated an unmerited notoriety.